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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/522,717

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Makoto Takemura

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EXAMINER

BLAN, NICOLE R

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

07/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,717	Applicant(s) TAKEMURA ET AL.	
	Examiner NICOLE BLAN	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31-46 is/are allowed.
- 6) ☒ Claim(s) 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The cancellation of claims 1-29 as well as the addition of claims 30-46 in the response filed on April 23, 2009 have been acknowledged.
2. In view of cancellation of claims 1-29, the previous rejection under 112, first paragraph has been withdrawn.
3. In view of cancellation of claims 1-29, the previous rejection under 112, second paragraph has been withdrawn.

Response to Arguments

4. Applicant's arguments filed April 23, 2009 have been fully considered but they are not persuasive.

In response to applicant's argument regarding claim 30 as rejected by Oya '999, the Examiner does not find this persuasive. In the absence of unexpected results, the concentration of the cleaning solution is a result effective variable. Oya '999 teaches adding that it is known to add isopropanol to an ozone solution for use in cleaning substrates. The concentration required could be dependent upon many factors such as the type of contaminant to be removed (e.g. a greater concentration may be required to remove certain contaminants) and the quantity/size of the contaminant to be removed. Without evidence of unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine the appropriate concentration of the cleaning solution based on the contaminants to be removed for the predictable results of cleaning the component of a semiconductor processing system, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering

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the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Thus, the general conditions of the claim are met as well as are enabled because Oya '999 teaches adding isopropanol to a solution used for cleaning substrates.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. **Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oya et al. (U.S. Patent 6,517,999, hereinafter '999) in view of JP 11-029795 (hereinafter JP '795).**

Claim 30: '999 teaches a method for cleaning semiconductor substrates using a solution comprising an ozone gas dissolved in a mixture of pure water and an organic solvent, such as isopropanol [the organic solvent is inherently added] [col. 5, line 55-col. 6, line 46; col. 12, lines

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37-41]. Thus, ozone water is formed. '999 does not explicitly teach the amount of organic solvent to add is in a range of 0.1 µg/liter to 0.1 g/liter. The concentration of the cleaning solution is a result effective variable. The concentration required could be dependent upon many factors such as the type of contaminant to be removed (e.g. a greater concentration may be required to remove certain contaminants) and the quantity/size of the contaminant to be removed. Without evidence of unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to determine the appropriate concentration of the cleaning solution based on the contaminants to be removed for the predictable results of cleaning the component of a semiconductor processing system, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Oya '999 teaches forming ozone water using pure water, but it does not explicitly teach that the water is ultra-pure water. However, JP '795 teaches a method of forming ozone water using ultra-pure water for use in cleaning semiconductors [see page 2 of translation, paragraph 4, lines 1-2]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use ultra-pure water as taught by JP '795 in place of the pure water disclosed by '999 for generating ozone water because JP '795 teaches that ultra-pure water is suitable for generating ozone water to be used in the cleaning of semiconductors.

Allowable Subject Matter

8. Claims 31-46 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

Oya '999 teaches a method for cleaning semiconductor substrates using a solution comprising an ozone gas dissolved in a mixture of pure water and an organic solvent, such as isopropanol [the organic solvent is inherently added] [col. 5, line 55-col. 6, line 46; col. 12, lines 37-41]. Thus, ozone water is formed.

Oya '999 teaches forming ozone water using pure water, but it does not explicitly teach that the water is ultra-pure water. However, JP '795 teaches a method of forming ozone water using ultra-pure water for use in cleaning semiconductors [see page 2 of translation, paragraph 4, lines 1-2]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use ultra-pure water as taught by JP '795 in place of the pure water disclosed by '999 for generating ozone water because JP '795 teaches that ultra-pure water is suitable for generating ozone water to be used in the cleaning of semiconductors.

JP '795 teaches that it is known to add ozone gas to an ultra-pure water solution via a porous polymer membrane. The prior art fails to teach adding the isopropanol to the pure water through a porous polymer membrane. The additional search conducted by the examiner has not indicated more relevant document. Thus, the art of record does not fairly teach or suggest adding isopropanol to pure water through a porous polymer membrane.

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Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICOLE BLAN whose telephone number is (571)270-1838. The examiner can normally be reached on Monday - Thursday 8-5 and alternating Fridays 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nicole Blan/
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792